

Work Order ID 126750***126750***

Page 1

Monday, November 24, 2014 10:33:16 AM

Item ID: D5134-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Damper Support Assembly, LH

Start Date: 11/24/2014 Start Qty: 10.00

~~*10*~~ 7

Cust Item ID:

Required Date: 11/24/2014 Req'd Qty: 10.00

~~*10*~~

Customer:

Reference:

Approvals:

Process Plan: MLSDate: 14-11-24

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D5134

A

100

0.00

100

Bandsaw

Memo

0.00

Jeaspa Bandsaw

CUT BLANK TO 5.125" LONG

7 ~~10~~

Ø

DAS
20
9-89

14-12-05

110

0.00

110

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

Mill as per Dwg and folio FB342

DWG REV: AFOLIO REV: A

DEBURR

7

DAS
44
9-89

14/12/08

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design ☐									
Doc/Data ☐									
Equip/Tooling ☐									
Handling/Pre ☐									
Material ☐									
Operator ☐									
Offset/Setup ☐									
Process ☐									
Supplier ☐									
Training ☐									
Transport ☐									
Unapproved ☐									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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126750

Page 2

N900040100

Setup Start *NS1*

Stop *NS2*

10

10

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design ☐									
Doc/Data ☐									
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Material ☐									
Operator ☐									
Offset/Setup ☐									
Process ☐									
Supplier ☐									
Training ☐									
Transport ☐									
Unapproved ☐									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge	☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Monday, November 24, 2014 10:33:16 AM

Page 3

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
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Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Monday, November 24, 2014 10:33:16 AM

Page 4

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
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Operator									
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Process									
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Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Work Order ID 126750***126750***

Page 5

Item ID: D5134-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Damper Support Assembly, LH

Stop ***NS2***

Start Date: 11/24/2014 Start Qty: 10.00

10

Cust Item ID:

Required Date: 11/24/2014 Req'd Qty: 10.00

10

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

190

QC21- Final Inspection - Work Order Release

0.00

190

QC

Memo

0.00

Quality Control

MLJ 15-01-22

MF
15-1-28

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

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Design									
Doc/Data									
Equip/Tooling									
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Material									
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Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Picklist Print

Monday, November 24, 2014 10:33:19 AM

Page 1

Work Order ID: 126750

126750

Parent Item: D5134-041

D5134-041

Parent Item Name: Damper Support Assembly, LH

Start Date: 11/24/2014

Required Date: 11/24/2014

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP REV:A NEW ISSUE 14-09-09 JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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NAS77C6-021		Purchased	No				Each	0.0000		20		JAN 20 2015	
-------------	--	-----------	----	--	--	--	------	--------	--	----	--	-------------	--

NAS77C6-021

BUSHING

M130270

**

14 FF

M7075T6B4.000X03.00
0

Purchased No

f 16.0000

5

DAS
20
9-89

M7075T6B4.000X03.000

**

4.960

11/12/05

7075-T6 BAR 4.000" X 3.000"

M7075T73B4.0x4.000

Location

Loc Qty

Loc Code

MAT006

16

M25584

1

M130312

3

M130938

12

M27736

D 130359



3.2

DAS
44
9-89

14/12/08

Could not pull mat!!

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

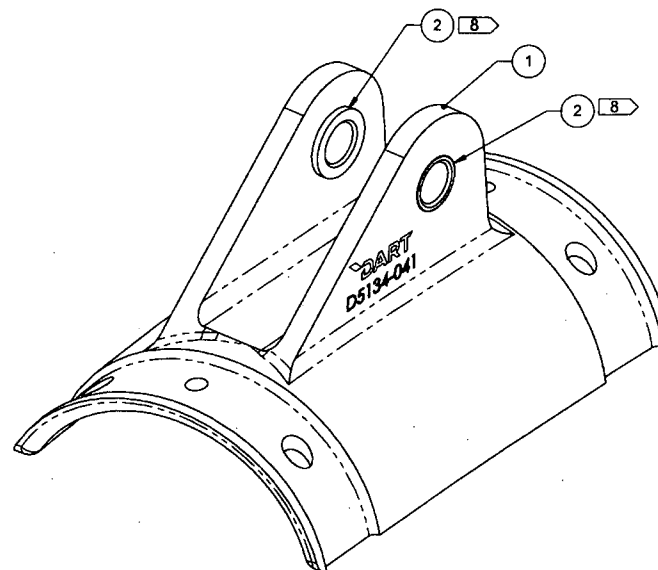
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Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge	☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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ITEM	QTY -041	P/N	DESCRIPTION
	X	D5134-041	DAMPER BRACKET ASSY, LH
1	1	D5134-1	DAMPER SUPPORT, LH
2	2	NAS77C6-021	BUSHING



D5134-041 DAMPER SUPPORT ASSY, LH

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PRIME AND PAINT WHITE PER DART QSI 005 4.2
MASK OFF INNER SURFACE OF BUSHING PRIOR TO APPLICATION OF PRIME/PAINT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.41 lbs
- 8) NAS77C6-021 BUSHINGS ARE PRESS FIT INTO D5134-1 DAMPER SUPPORT, IN ORIENTATION SHOWN

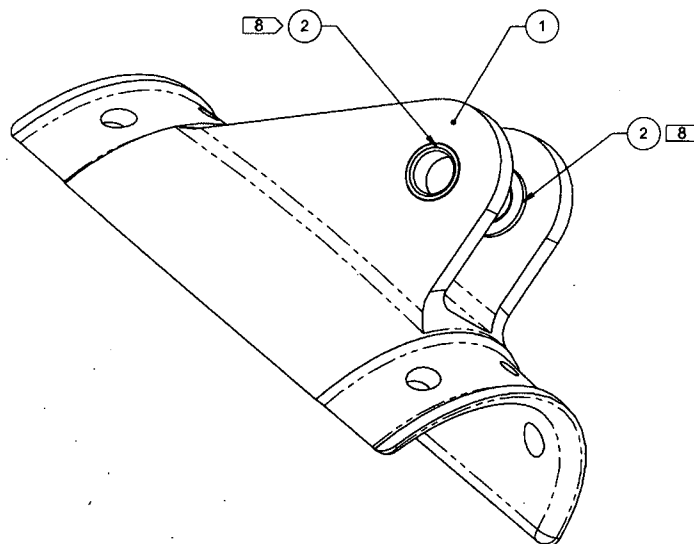
STOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 126750 MJS

14-11-24

RELEASED
2014-10-08
MP

APPROVED	A	NEW ISSUE		AP	14.09.02
	REV.	DESCRIPTION		BY	DATE
	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		
	DRAWN	AP			
	CHECKED	ML	DRAWING NO.	REV. A	
	MFG. APPR.	RQ	D5134	SHEET 1 OF 4	
	APPROVED	MP	TITLE	SCALE	
	DE APPR.	DS	DAMPER SUPPORT ASSY	NTS	
	DATE	14.09.02	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

ITEM	QTY	P/N	DESCRIPTION
	X	D5134-042	DAMPER SUPPORT ASSY, RH
1	1	D5134-2	DAMPER SUPPORT, RH
2	2	NAS77C6-021	BUSHING



D5134-042 DAMPER SUPPORT ASSY, RH

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PRIME AND PAINT WHITE PER DART QSI 005 4.2
MASK OFF INNER SURFACE OF BUSHING PRIOR TO APPLICATION OF PRIME/PAINT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.42 lbs
- 8) NAS77C6-021 BUSHINGS ARE PRESS FIT INTO D5134-2 DAMPER SUPPORT, IN ORIENTATION SHOWN

APPROVED

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AP		
CHECKED	ML	DRAWING NO.	REV. A
MFG. APPR.	RQ	D5134	SHEET 2 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	D5	DAMPER SUPPORT ASSY	NTS
DATE	14.09.02	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

RELEASED
2014-10-08
MD

9 Ø0.188 TOOLING HOLE
AS REQUIRED, 2 PL

9 Ø0.257 TOOLING HOLE
AS REQUIRED, 4 PL

0.893
REF

0.36
TYP

0.632
REF

R0.63

Ø0.500^{+0.000}_{-0.001}
THRU

R0.25
THIS EDGE ONLY

6

DART
D5134-041

GRAIN
DIRECTION

0.36
4 PL

0.100
2 PL

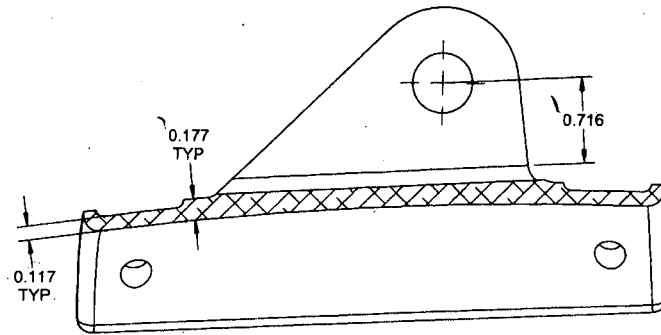
0.728
2 PL

4.671
REF

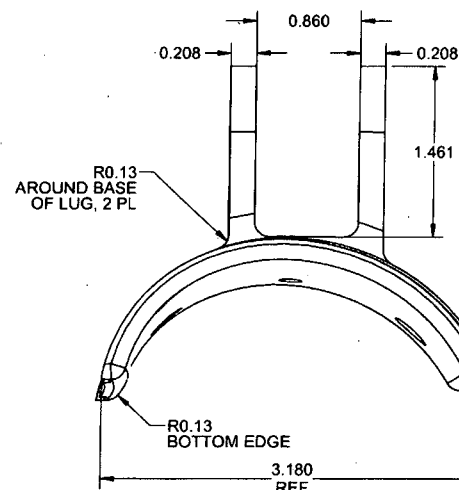
D5134-1 DAMPER SUPPORT, LH

NOTES:

- 1) MATERIAL: ALUMINUM 7075-T6 (OR T651 / T6510 / T6511 / T62) ALUMINUM BAR
PER AMS-QQ-A-225/9 (OR AMS 4122 / 4123 / 4186 / 4187) OR
PER AMS-QQ-A-200/11, REF DART SPEC M7075T6B
- 2) FINISH: CHEMICAL CONVERSION COAT PER QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART LOGO AND P/N "D5134-041" IN AREA SHOWN
USING 0.125 HIGH X 0.010-0.020 DEEP LETTERING PER DART QSI 044 6.3,
IDENTIFY WITH DART B/N PER DART QSI 044 6.1
- 7) WEIGHT: 0.38 lbs
- 8) ALL NON-DIMENSIONED FEATURES DEFINED PER DRAWING FILE "D5134-1-REVA.SLDPRT"
- 9) POSITION TOOLING HOLES AS REQUIRED WHILE MAINTAINING MINIMUM 2D EDGE DISTANCE AND 4D PITCH BETWEEN HOLES



SECTION A-A

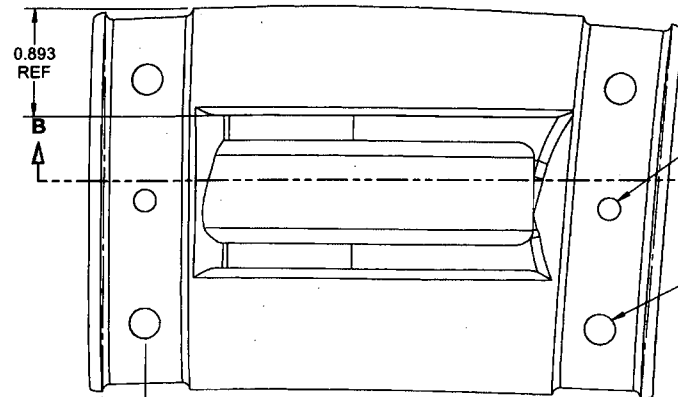


RELEASED
2014-10-08

APPROVED

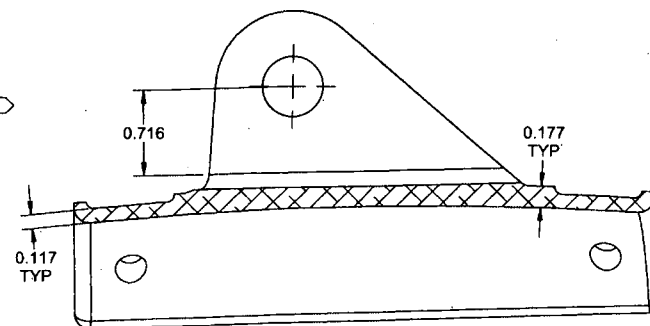
DESIGN	AP
DRAWN	AP
CHECKED	ML
MFG. APPR.	RQ
APPROVED	MP
DE APPR.	DS
DATE	14.09.02

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D5134	REV. A SHEET 3 OF 4
TITLE DAMPER SUPPORT ASSY	SCALE NTS
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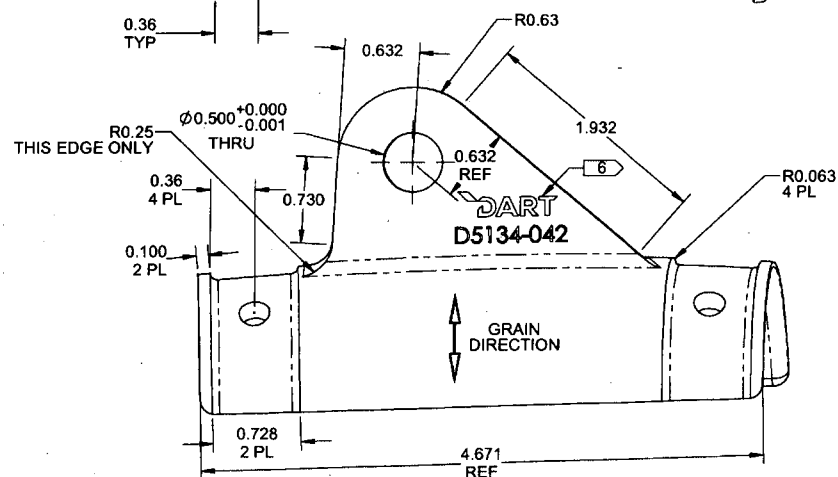


Ø0.188 TOOLING HOLE
AS REQUIRED, 2PL

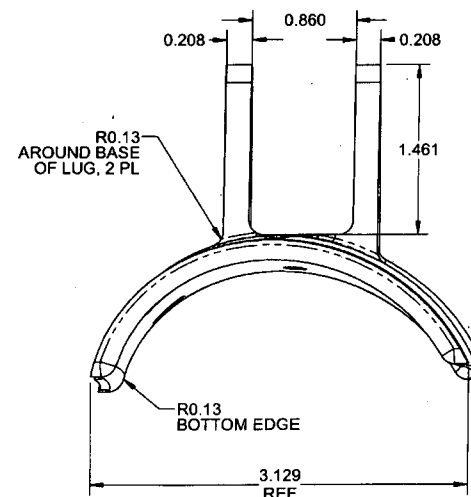
Ø0.257 TOOLING HOLE
AS REQUIRED, 4PL



SECTION B-B



D5134-2 DAMPER SUPPORT, RH



RELEASED
2014-10-08

NOTES:

- 1) MATERIAL: ALUMINUM 7075-T6 (OR T651 / T6510 / T6511 / T62) ALUMINUM BAR
PER AMS-QQ-A-225/9 (OR AMS 4122 / 4123 / 4188 / 4187) OR
PER AMS-QQ-A-200/1, REF DART SPEC M7075T6B
- 2) FINISH: CHEMICAL CONVERSION COAT PER QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART LOGO AND P/N "D5134-042" IN AREA SHOWN
USING 0.125 HIGH X 0.010-0.020 DEEP LETTERING PER DART QSI 044 6.3,
IDENTIFY WITH DART B/N PER DART QSI 044 6.1
- 7) WEIGHT: 0.38 lbs
- 8) ALL NON-DIMENSIONED FEATURES DEFINED PER DRAWING FILE "D5134-2-REVA.SLDPRT"
- 9) POSITION TOOLING HOLES AS REQUIRED WHILE MAINTAINING MINIMUM 2D EDGE DISTANCE AND 4D PITCH BETWEEN HOLES

APPROVED

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	ML	DRAWING NO.	REV. A
MFG. APPR.	RQ	D5134	SHEET 4 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	DAMPER SUPPORT ASSY	NTS
DATE	14.09.02	COPYRIGHT © 2014 BY DART AEROSPACE LTD	
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Jean-Luc Menard

From: David Shepherd
Sent: December-08-14 4:24 PM
To: Alex Pharand
Cc: Jean-Luc Menard; Mike Petsche; Laith Qatami
Subject: RE: 119 MKII Damper Supports

Alex,

I am good with this substitution. In fact, 7075-T73 is preferable to 7075-T6 from the point of view of fatigue and SCC, so I would be in favor of permanently changing the drawing.

Regards,
David

From: Alex Pharand
Sent: December-08-14 9:30 AM
To: David Shepherd
Cc: Jean-Luc Menard; Mike Petsche; Laith Qatami
Subject: RE: 119 MKII Damper Supports

600kg not lbs, forget about previous email. See below... my bad

From: Alex Pharand
Sent: December-08-14 11:26 AM
To: 'David Shepherd (dshepherd@dartaero.com)'
Cc: 'Jean-Luc Menard (jmenard@dartaero.com)'; 'Mike Petsche'; Laith Qatami
Subject: 119 MKII Damper Supports

David,

JL has just informed me that we do not have the 7075-T6 material required for the D5134 Damper Supports. He is suggesting that we use 7075-T73 instead. I believe this would be an acceptable substitute. See the comparison of strength values per MMPDS below (I have attached the page as a reference). I you agree I will sign off the deviation.

Assumptions:

1. Clamping stress is negligible through design (design uses bushings between the damper and the support).
2. Part is primarily loaded in shear/bearing.
3. Fitting factors per FAR 27.625 apply (@1.15)
4. Limit load on damper is 600 kg

Bearing Stress:

Ultimate load applied by damper is – 600 lbf X 1.15 X 1.5 X 2.2= 2277lbf

Bearing area of damper bracket = 2 X 0.125 X 0.5 = 0.125 in²

Bearing stress = 18.3 ksi

MS (bearing) = (100/18.3)-1= 5.5

Fatigue:

MMPS does not have comparative data but the 7075-T73 should have better fatigue properties as it is a softer temper when compared to T6?

Material Properties Comparison:

7075-T6:

1. FTU = 77 ksi
2. FTY=66 ksi
3. FCY=64 ksi
4. FSU=46 ksi
5. FBRU=100 ksi
6. FBRY=86 ksi

7075-T73:

1. FTU = 68 ksi (13% reduction in strength)
2. FTY=56 ksi (18% reduction in strength)
3. FCY=54 ksi (19% reduction in strength)
4. FSU=42 ksi (10% reduction in strength)
5. FBRU=101 ksi (negligible)
6. FBRY=81 ksi (6% reduction in strength)

Alex